A small agricultural pest called the cottony cushion scale exhibits a bizarre form of hermaphroditism in which parasitic males infect their daughters at birth. This parasite lives in the daughter and fertilizes her eggs.

A new study reports that males of the insect species are dying out. "The father has a selfish interest," said Andy Gardner, a biologist at Oxford University and the study's lead author. "If he could mate with his daughters and father their daughters, that would increase his fitness, so he sets up this tissue in them, which is just a little clone of himself."

He and his Oxford colleague Laura Ross developed a mathematical model to study the insect’s reproductive patterns. They publish their results in the August issue of The American Naturalist.

Once infected, females tend to reproduce with their parasitic fathers rather than an outside male, the researchers report. As a result, the true male population dwindles.

"The males exist, but they are very, very rare," Dr. Gardner said.
Dr. Ross is now setting up a lab population of the insect at Oxford to answer questions about the role of males if all females are hermaphrodites.

“If these real males are able to mate with hermaphroditic females, how does their sperm compete with the sperm already in the females?” she said.

Although hermaphroditism is not rare in the rest of the animal kingdom, the cottony cushion scale is one of only three insect species known to exhibit the behavior. The others are also scale insect species.